

CA
8/3/05

insulating material according to the present invention; FIG. 5A is a partial cross-sectional view of a completed SSOI isolation structure according to the present invention; FIG. 5B is a partial cross-sectional view of an optional completed SSOI isolation structure according to the present invention; FIG. 6 is a partial top view of an SSOI device according to the present invention; FIG. 7A is a partial cross-sectional view through line 7A/B of FIG. 6 illustrating an SSOI structure filled according to the processes illustrated in FIGs. 3A through 3E; FIG. 7B is a partial cross-sectional view through line 7A/B of FIG. 6 illustrating an SSOI structure filled according to the processes illustrated in FIGs. 4A through 4C; FIGs. 8A through 8D are partial cross-sectional views of alternative SSOI device structures; FIG. 9 is a partial cross-sectional view of an integrated circuit die having both bulk silicon devices and SSOI devices; and FIG. 10 is a partial cross-sectional view of an integrated circuit die having both bulk silicon devices and SSOI devices with in a SOI substrate.

DETAILED DESCRIPTION

Sub A

[0006] FIGs. 1A through 1H are partial cross-sectional views illustrating a first embodiment for formation of a SSOI trench according to the present invention. In FIG. 1A, a substrate 100 having a top surface 105 is illustrated. In a first example, substrate 100 is a monocrystalline (bulk) silicon substrate lightly doped P type (e.g. $1E17 \text{ atm/cm}^3$). In a second example, substrate 100 is a substrate having at least a monocrystalline silicon layer extending to top surface 105. A first dielectric layer 110 having a top surface 115 is formed on top surface 105 of substrate 100.